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ABSTRACT

A study examined the applicability of the Ordering Hypothesis to Japanese suffixes. The hypothesis, which claims that affixes that trigger phonological rules (cyclical affixes) do not appear external to affixes that do not, is found to be an inappropriate assumption in Japanese. Examples in English and Chamorro support this finding. It is suggested that since the Ordering Hypothesis is a major tenet of lexical phonology, some modification of the organization of morphology and phonology is necessary. (MSE)

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Japanese Suffixal Accentuation and Lexical Phonology

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Recent work by Halle & Vergnaud (1987) propose some modifications in Lexical Phonology. In order to handle certain problematic data, these modifications include the following: that cyclic morpheme is affixed on a plane different from that of the stem while a noncyclic morpheme is affixed on the same plane as the stem; and that whether or not a given affix is cyclic is an idiosyncratic property of that affix. In the first part of this paper, I show problematic data from English and Chamorro that motivated Halle & Vergnaud to propose these modifications, and in the second part, I consider additional problematic data from Japanese that support these modifications.

What has been called "Ordering Hypothesis", which was originally proposed by Siegel (1974), is a major tenet in Lexical Phonology. This hypothesis claims that affixes which trigger phonological rules (i.e., cyclic affixes) do not appear external to affixes which do not. This hypothesis is further assumed by Halle & Mohanan (1985), among others, who likewise claim that noncyclic affixes cannot be internal to cyclic affixes. Relevant examples are shown in (1).

(1) a. communal, communality, communalness

b. guardedness, *guardedity

Communal, and communality show that -al and -ity are cyclic since they trigger stress assignment rule, whereas communalness indicates that -ness is noncyclic since no stress rule is triggered. In communalness, since the stress sensitive suffix is internal to the stress neutral suffix, this word does not violate the Ordering Hypothesis. In (1b), both -ed and -ness are stress neutral, so guardedness is a well-formed word. On the other hand, as we observed in (1a), -ity is a stress sensitive suffix while -ed in (1b) is not. Since the stress neutral suffix is internal to the stress

sensitive suffix in *guardedity in (1b), the word is ruled out as ill-formed. Thus, the ill-formedness of *guardedity in (1b) resides in the fact that a noncyclic affix is internal to a cyclic affix.

Counterexamples of the Ordering Hypothesis, though, have been observed at least in two languages. One is English where Aronoff (1976) has observed some counterexamples, and the other is found in Chamorro, as discussed in Halle (1987). Aronoff observed that the Ordering Hypothesis is contradicted by the English words in (2).

(2) patent-abil-ity prevent-abil-ity
govern-ment-al develop-ment-al

The suffixes -abil and -ment do not have effect of changing the stress pattern, whereas -ity and -al do. In other words, a noncyclic suffix is internal to a cyclic suffix in all the words in (2). Nevertheless, the words in (2) are well-formed.

Another type of counterexample to the Ordering Hypothesis is the well known Bracketing Paradox. Examples of such are found in words like [un[grammatical]]ity]. In considering the word ungrammaticality, first we note that the prefix un- is restricted to adjectives, thus, it has to be prefixed to grammatical. Second, the prefix un- is noncyclic in that it does not trigger n-assimilation like the prefix in-. Third, the suffix -ity is cyclic, and is suffixed to ungrammatical. Hence, the word ungrammaticality is the case where a noncyclic prefix, i.e., un- is internal to the cyclic suffix, i.e., -ity.

Counterexamples of this sort are found in Chamorro, as discussed in Halle (1987).

(3) a. [[mi-mantika]-na] 'fatter'
b. [[ma-fa?gasi]-na] 'its being washed'
na = comparative, mi = adjective forming,
mantik = far, ma = passive prefix

(4) a. maguf 'happy'
b. na?-maguf 'cause to be happy'

c. a-na?-magur 'cause to be happy' recip.

(3a) and (3b) are contrastive. The adjective-forming prefix mi- in (3a) is cyclic, while the passive prefix ma- in (3b) is noncyclic, and the suffix -na is cyclic. No problem arises in (3a) since a cyclic prefix is internal to another cyclic suffix. However, (3b) goes against the Ordering Hypothesis because a noncyclic prefix is internal to a cyclic suffix. Thus, the example in (3b) is equivalent to the English example of ungrammaticality. Examples in (4) are parallel to those in (2) in English where affixes on the same side provide a counterexample to the Ordering Hypothesis. In (4b) the causative prefix na?- is noncyclic. In (4c), however, na?-, which is noncyclic, is further prefixed by a cyclic prefix a-. Hence, a noncyclic prefix is internal to a cyclic prefix.

In the rest of this paper, I will discuss another possible set of counterexamples to the Ordering Hypothesis. There are about a dozen classes of suffixes in Japanese which form an intransitive/transitive pair. I will first show the accentuation pattern associated with such suffixes. Relevant sets of data are listed in (5-8). (Data are shown before additional suffixes are added.)

(5) re/s

	intransitive	transitive	
a.	tao-re	tao-s	'fall'
b.	naga-re	naga-s	'float'
c.	mu-re	mu-s	'steam'
d.	tubu-re	tubu-s	'press'

(6) r/s

a.	nao-r	nao-s	'mend'
b.	noko-r	noko-s	'leave behind'
c.	kutugae-r	kutugae-s	'turn down'
d.	too-r	too-s	'go through'
e.	wata-r	wata-s	'pass/cross'

(7) ar/e

a.	tasuk-ar	tasuk-e	'help'
b.	sag-ar	sag-e	'go down'
c.	mag-ar	mag-e	'bend'
d.	kim-ar	kim-e	'decide'

(8) i/os

a.	ok-i	ok-os	'get up'
b.	or-i	or-os	'get off'
c.	ot-i	ot-os	'drop'
d.	horob-i	horob-os	'destroy'

The morphemes in (5-8), among others, form the intransitive/transitive pairs by their suffixation to a verb root. I will call "root" the portion to which the intransitive/transitive suffixes are attached, and "stem" the output of the suffixation at issue. Note that the morphemes in (5-8) are restricted to roots. The asterisk in (5-8) indicates the place of accent. I adopt the accentuation system used for Japanese suffixes in Tenny (1986). She divides Japanese verbal suffixes into three types: They are recessive (unaccented) suffixes, dominant-accented suffixes, and dominant-shifting suffixes. Recessive (unaccented) suffixes do not affect the accent on the stem/root regardless of whether the stem/root is accented or unaccented. The accent of a dominant-accented suffix overrids the stem/root accent, if there is one, always determining the surface accent. With a dominant-shifting suffix, when the stem/root is accented, that accent shifts; whereas when the stem/root is unaccented, the whole thing remains unaccented.

Further investigation shows that the classification of the suffixes on the basis of their accentuation behavior is the following: the two suffixes in (5) and the two suffixes in (6) together with e in (7) and i in (8) are recessive, ar in (7) is dominant-shifting, and os in (8) is a dominant-accentied suffix. In Halle and Mohanan (1985) where they discuss accentuation patterns in Vedic Sanskrit, it is claimed that

dominant suffixes are cyclic while recessive suffixes are noncyclic, and that a dominant suffix may follow another dominant suffix whereas a recessive suffix must not be affixed to the stem which contains a dominant suffix. If we accept this assumption, then as we will soon see, the Ordering Hypothesis is apparently contradicted by the predicate morphology in Japanese. It should be remembered that the two suffixes in (5) and the two suffixes in (6) as well as the suffix e in (7) and the suffix i in (8) are all recessive suffixes. As I described earlier, the output of these suffixes to the root is the stem. The stem is further suffixed by another morpheme. For example, all the stems in (5-8) can be suffixed by the non-past tense suffix -(r)u, and the informal tentative suffix -(y)oo, among others. Thus, (9) and (10) show the applications of such morphological process to the (a) examples of (5-8).

(9) -(r)u

a. tao-re-ru	a'. tao-s-u
b. nao-r-u	b'. nao-s-u
c. tasuk-ar-u	c'. tasuk-e-ru
d. ok-i-ru	d'. ok-os-u

(10) -(y)oo

a. tao-re-yoo	a'. tao-s-oo
b. nao-r-oo	b'. nao-s-oo
c. tasuk-ar-oo	c'. tasuk-e-yoo
d. ok-i-yoo	d'. ok-os-oo

The non-past tense suffix -ru is dominant-shifting while the informal tentative suffix -yoo is dominant-accented. (9a, a', b, b', c', d) and (10a, a', b, b', c', d) are crucial examples for our purpose in that in these words a recessive suffix is internal to a dominant suffix. The recessive intransitve/transitive suffixes followed by a dominant suffix contradicts the view that a recessive suffix must follow a dominant suffix, given that the former is noncyclic and the latter is cyclic. Such accentuation

property associated with the predicate morphology in Japanese is quite distinct from the stress/accent placement observed by Halle & Mohanan (1985) in Vedic Sanskrit and English. This conflict cannot be solved by re-ordering the two types of suffixes since, as I mentioned above, the intransitive/transitive suffixes are stem-forming suffixes and are restricted to roots. So the forms in (11) are not well-formed verbals in Japanese even though they would be able to maintain a dominant suffix internal to a recessive suffix.

(11) a. *tao-ru-re
D R

a'. *tao-u-s
D R

b. *ok-ru-i

b'. *ok-u-s

c. *tao-yoo-re

c'. *tao-yoo-s

d. *ok-(y)oo-i

d'. *ok-(y)oo-os

Therefore, here it is not possible to order the dominant suffixes before the recessive ones.

The Japanese data presented above, then, show that the above mentioned assumption that a dominant suffix must not follow a stem which contain a recessive suffix cannot be maintained in Japanese. The counterexamples from three different languages, namely, English, Chamorro,and Japanese, thus, all agree in one point. That is, the Ordering Hypothesis cannot be right and since the hypothesis is a major tenet of Lexical Phonology, some modification must be made with respect to the organization of morphology and phonology. These Japanese data, then, along with the English examples in (2) and Chamorro data previously discussed support the modifications of Lexical Phonology along the lines of that proposed in Halle & Vergnaud (1987).